

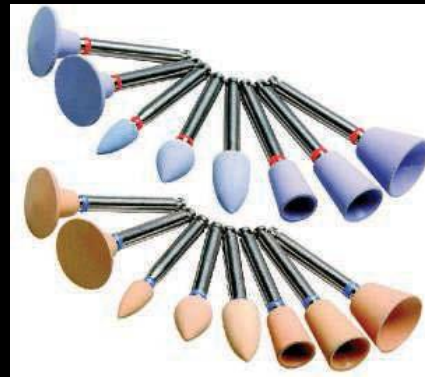


# Tools and Instruments

Presented by

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# **Classification of Dental Instruments**

# **Instruments can be classified according to the prosthetic step into:**

- A. Protective tools
- B. Diagnostic tools
- C. Patient disposable tools
- D. Tooth Preparation tools
- E. Impression tools and materials
- F. Provisional restorations tools and materials

## **A. Protective tools:**

1. *Eye-wear protection or Face shields:* for eye protection.
2. *Face Mask:* to protect nose and mouth.





### 3. *Gloves:*

- a. **Latex:** non-powdered is better than powdered for allergy.
- b. **Vinyl:** Less flexible than latex, rarely cause any allergy.
- c. **Nitrile:** Best material. **Resist tearing, rarely cause any allergy.**

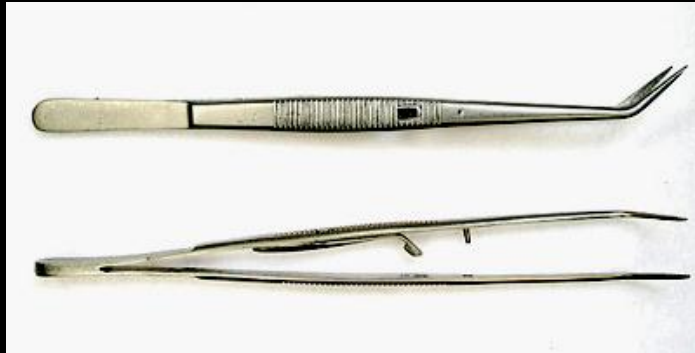




**Over-gloves:** **only** used to get supplies out of dental cabinet. Should not be used in contact with patient.



## **B. Diagnostic tools:**



## **B. Diagnostic tools**

*1. Mouth mirrors:* used for

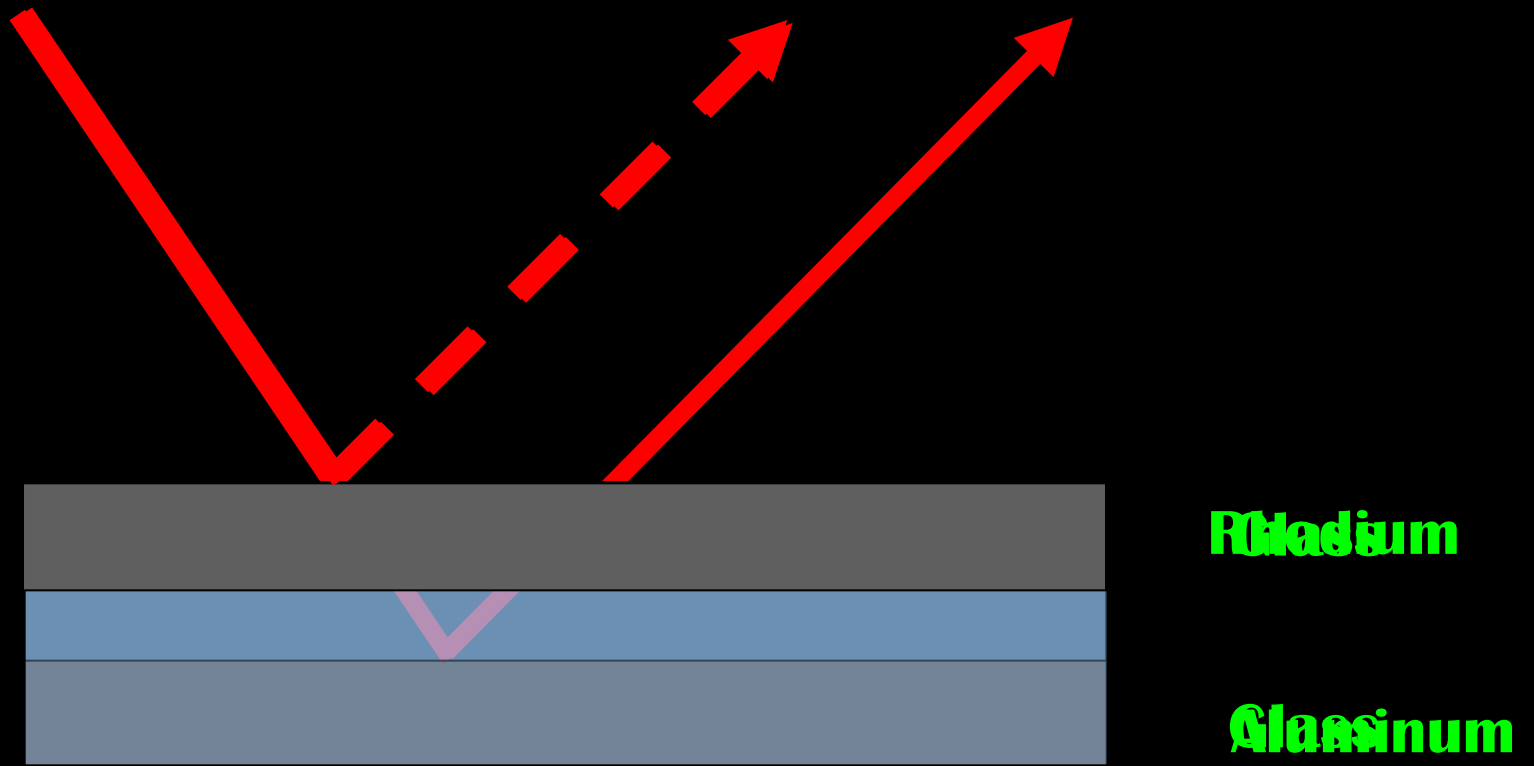
- Indirect vision.
- Indirect illumination.
- Retraction.



**a. Back Surface** mouth mirrors have the reflecting Surface (obtained by evaporated Aluminum) on the back of the mirror glass.

**b. Front surface "rhodium"** mouth mirrors have the reflecting Surface of the Front Surface mirrors (through evaporation of Rhodium). Have the advantage of sharpness of the reflected image. **Only reflects one image. (better)**





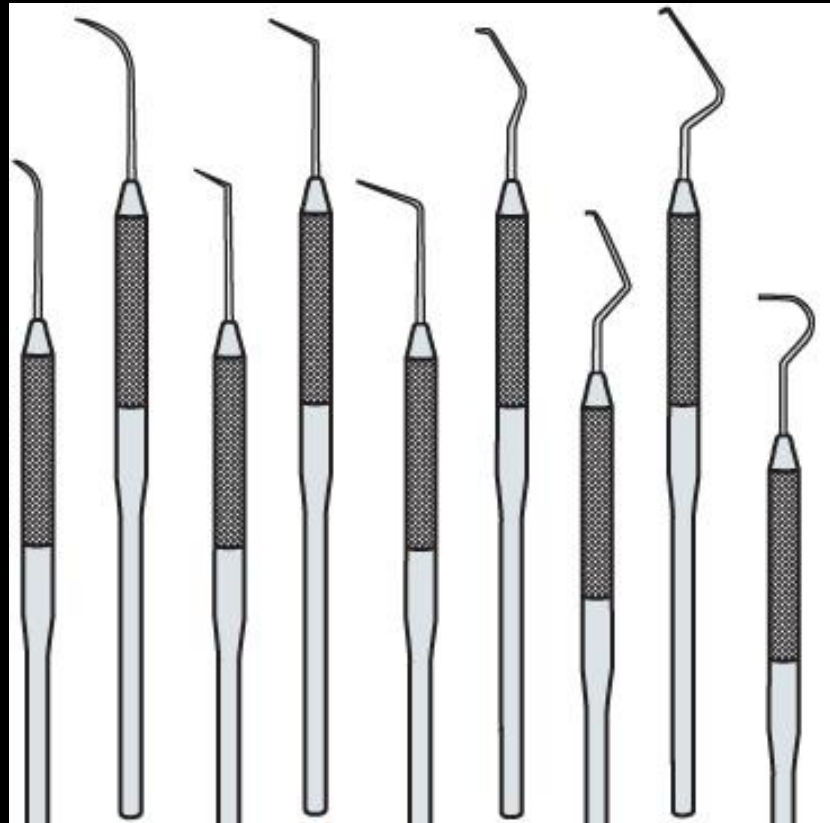
Front surface mirror

Mirrors also available: with **normal view** or **magnifying view**, plastic handle or metal handle.

They come in different sizes. The most suitable is **size 5**.

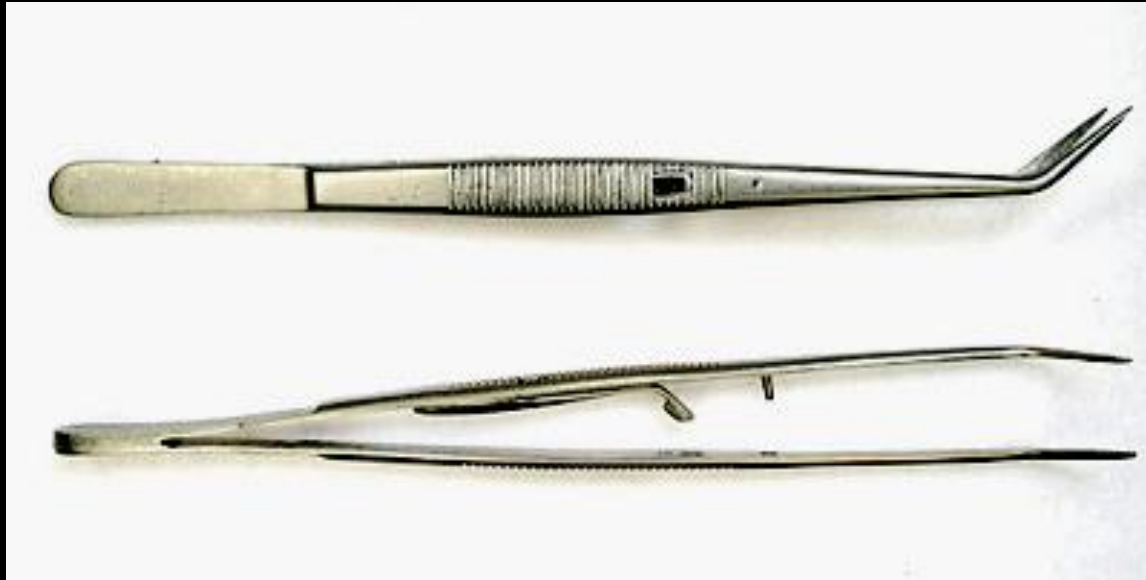


2. Sharp explorer (probe): Used to detect caries, restoration margins.





### 3. *Tweezers:* standard or self-locking.



4. *Stock Impression trays:* used to carry  
impression materials into patient's mouth.

# Types:

## a. According to its material:

### 1. Stainless steel:

#### Advantages:

- Can be sterilized
- Does not distort during removal from patient's mouth.

#### Disadvantages:

- Expensive
- Can not be adjusted (bent), so it comes with many sizes.





## 2. Aluminum:

### Advantages

- Can be adjusted to patient's mouth
- Cheep.

### Disadvantage

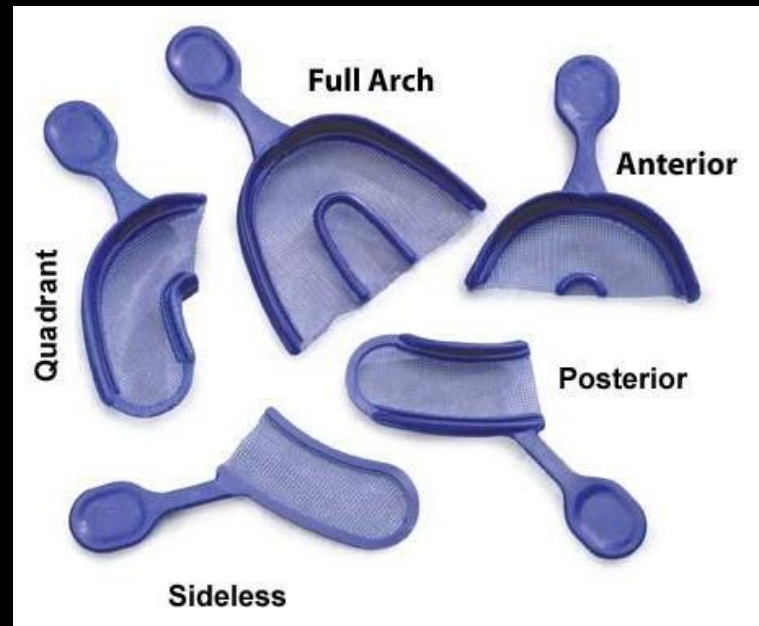
- Can be distorted during removal from patient's mouth.



It comes in three sizes, size 2 is most common.



3. Plastic: usually disposable. Its advantage is being cheap. Its disadvantage is that it is being difficult to sterilize.





**b. According to part of mouth they cover:**  
Full arch or sectional.



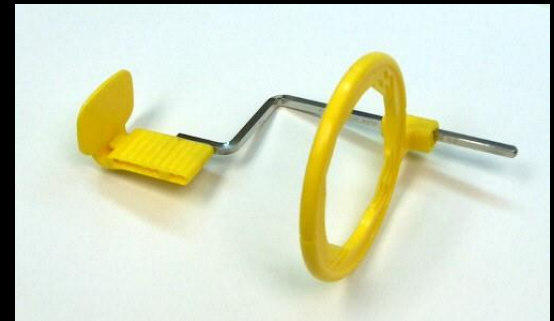
## 5. *Rubber bowl and alginate spatula*

- Used for mixing alginate impression material.
- Rubber bowl should be made from hard rubber to resist mixing hand-force.



## 6. *X-ray films and x-ray holders*

- *X-rays films* are used to view teeth, bone and surrounding structures.
- *X-ray holders* are used to ensure parallel relationship between film and x-ray beam.



## **C. Patient disposables:**

1. *Plastic or waxed paper cup:* for patient to rinse his mouth.
2. *Waxed paper towel:* to protect patient clothing.



3. *Suction tip*: to aspire liquids and saliva of patient's mouth.

4. *Cotton rolls*: used control moisture , saliva and blood

Stored and taken from cotton roll dispenser.



## **D. Tooth Preparation tools:**

Tooth preparation is performed by rotary cutting instruments that are held and operated by removable shank called **(Hand piece)**

# **1. Hand pieces**

Classified according to the speed (RPM)  
revolution per minute;

- a. low speed 3000 to 10000 RPM
- b. Intermediate speed 10000 to 40000 RPM.
- c. Super high speed 40 000 to 100 000 RPM.
- d. Ultra high speed 100 000 to 500 000 RPM. (air turbines)



**For Low, intermediate and super  
high speeds handpieces they are  
further classified into;**

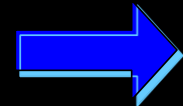
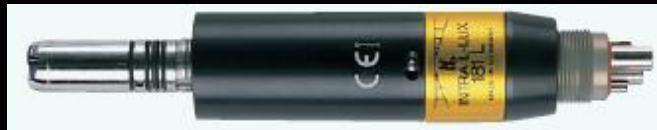
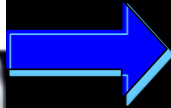
# **1. According to the shape;**

- a. **Straight hand piece** (used for surgery and lab procedures)
- b. **Contra angle hand piece** (used for tooth preparation)



## 2. According to the power source;

- a. Rotated by air pressure from a compressor to an air-motor.



**AIR**

b. Rotated by electricity form micro-motor.



### 3. According to the stone holding mechanism;



**a. Push button**



**b. Friction grip**



**c. Latch type**

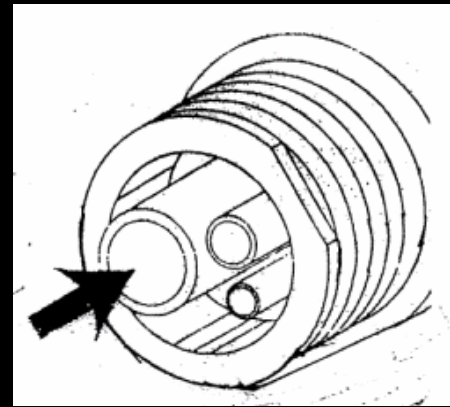
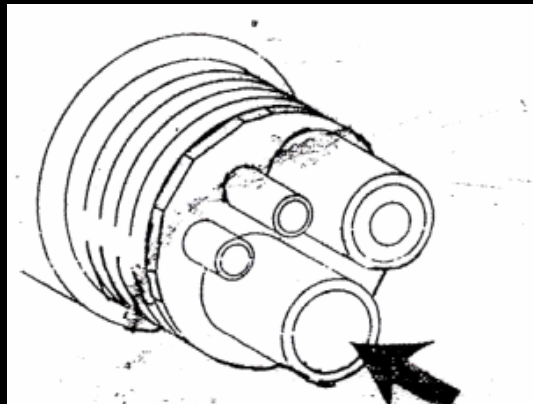
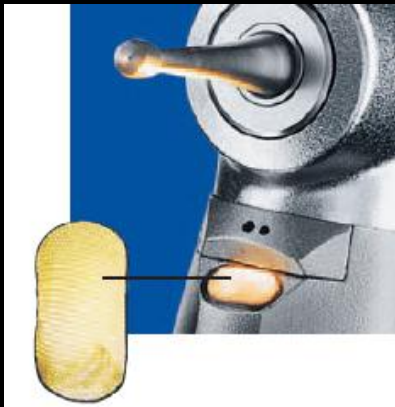
# For ultra high speeds handpieces they are further classified;

a. According to illumination:

With or without fiber optic illumination.

b. According to its holes at bottom:

Midwest 4 hole or Borden 2 hole.



## **2. Rotary stones and burs:**

used for

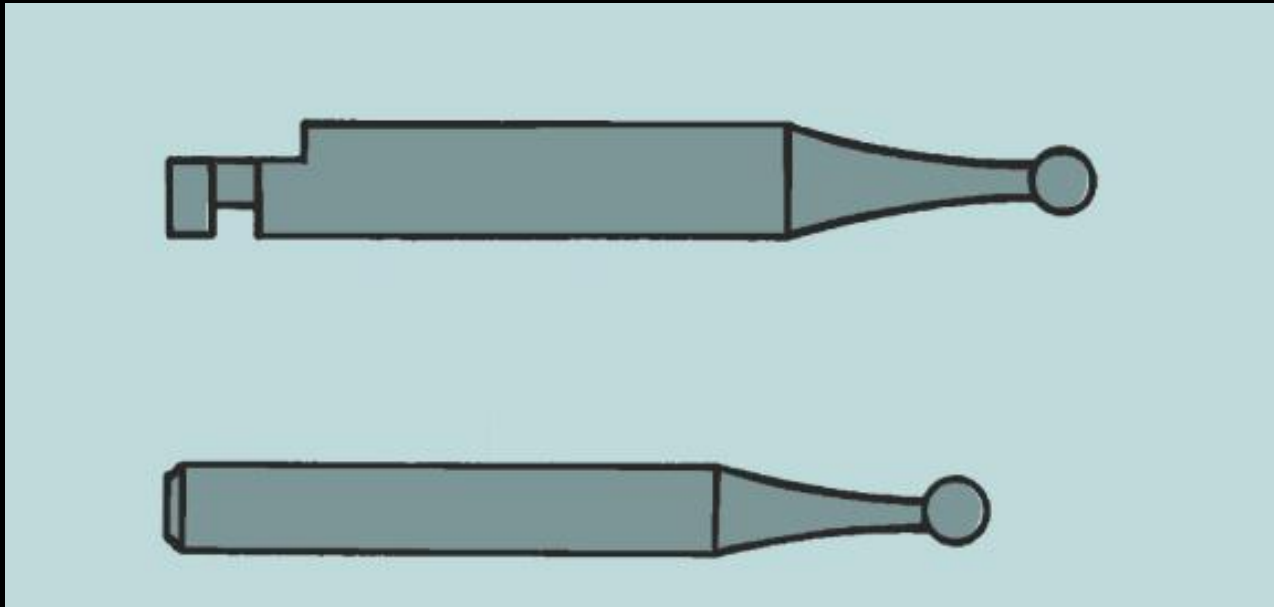
- Tooth reduction
- Removal of caries and old restorations.



Classified according to:

a. Connection to the handpiece into:

Latch type or friction lock



b. Its material into:

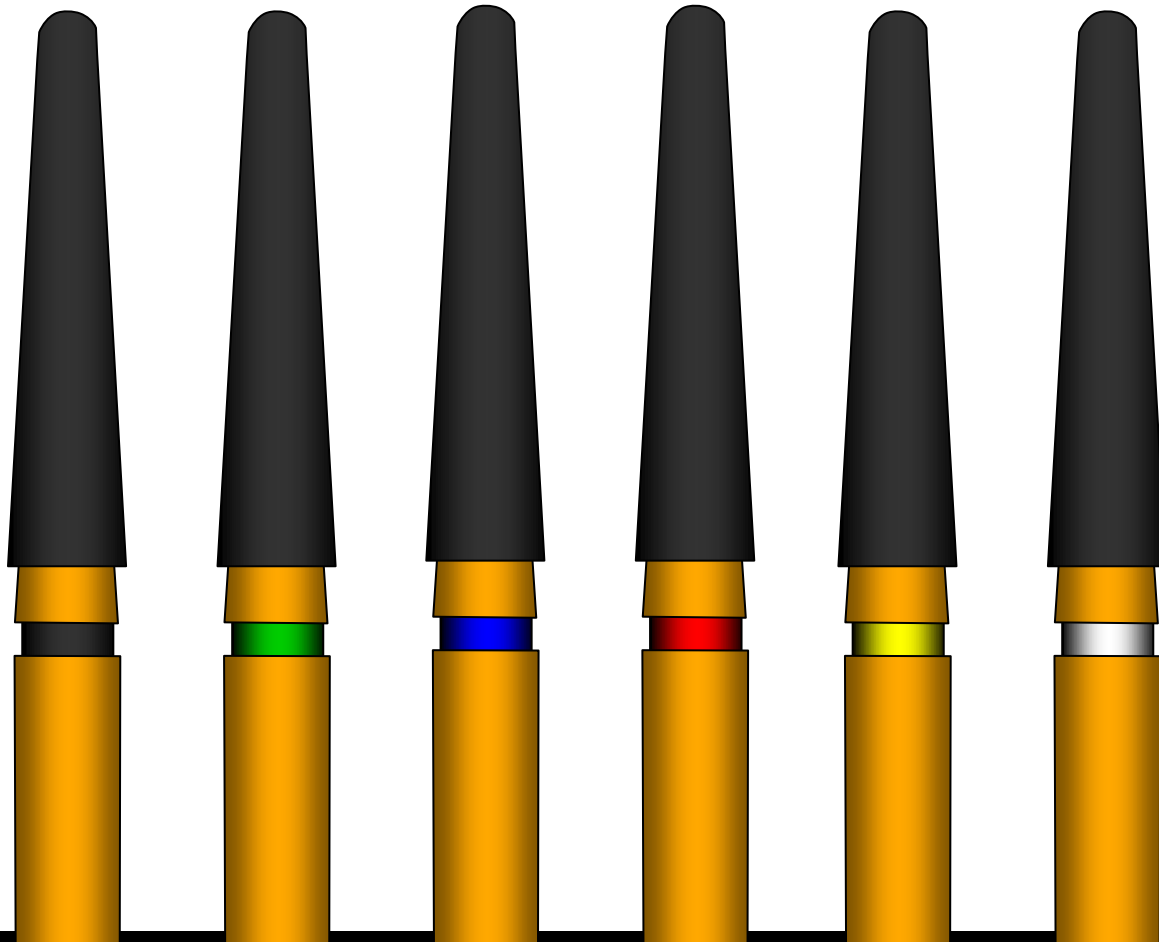
- Carbide burs.
- Diamond covered stones.



Diamonds are classified according to their roughness (grit size)



From coarse to fine **Black** > **green** >  
**blue** > **red** > **yellow** > white

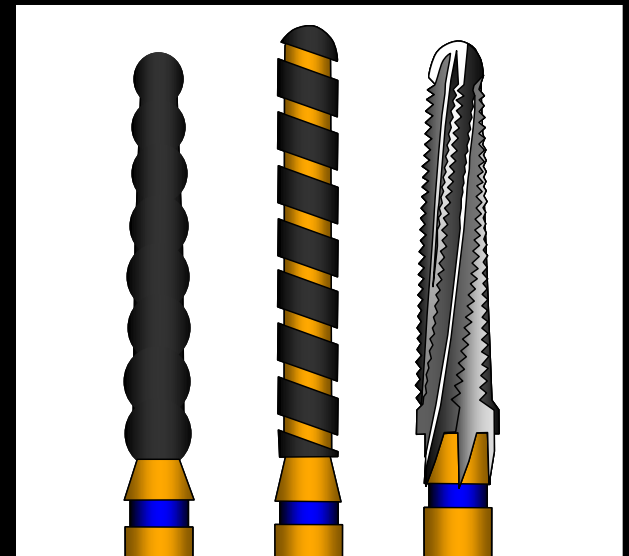
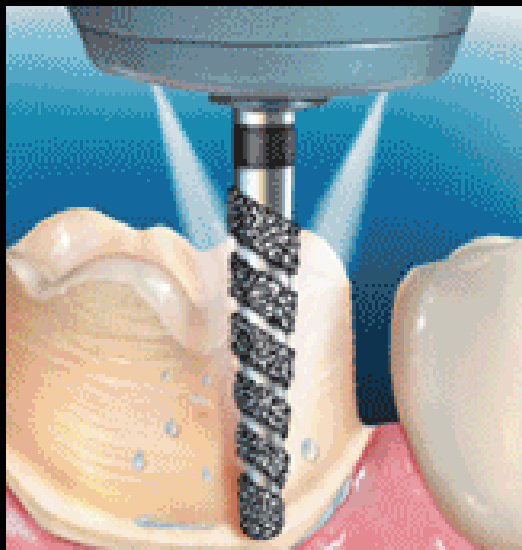


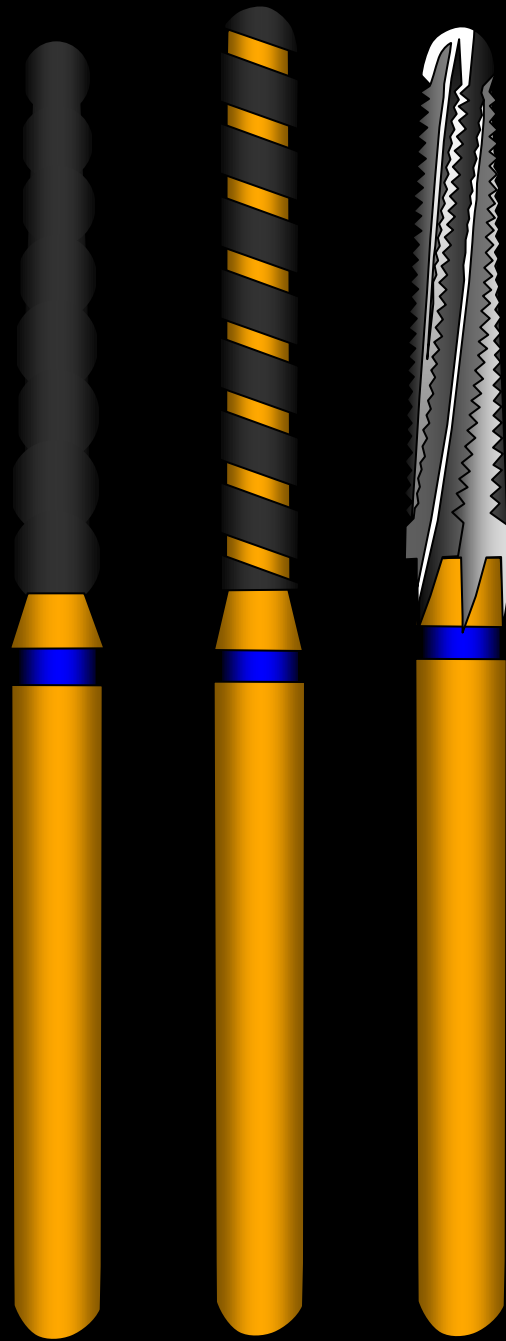
c. Its use into:

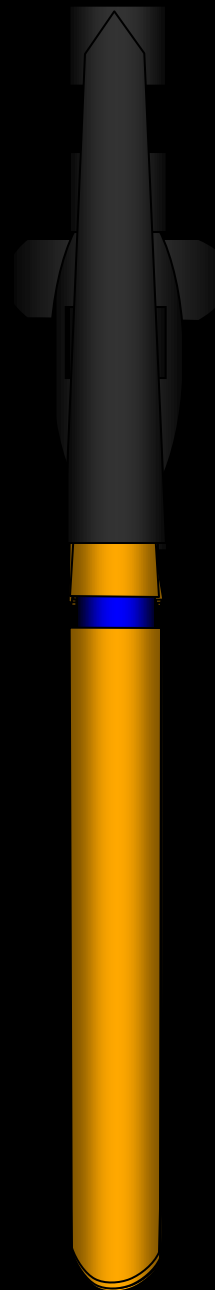
*1. Turbo and bulk tooth reduction (reducers)*

Stones and burs with special shapes designed for fast and aggressive tooth reduction.

**Disadvantage:** In inexperienced hands could lead to pulp exposure.



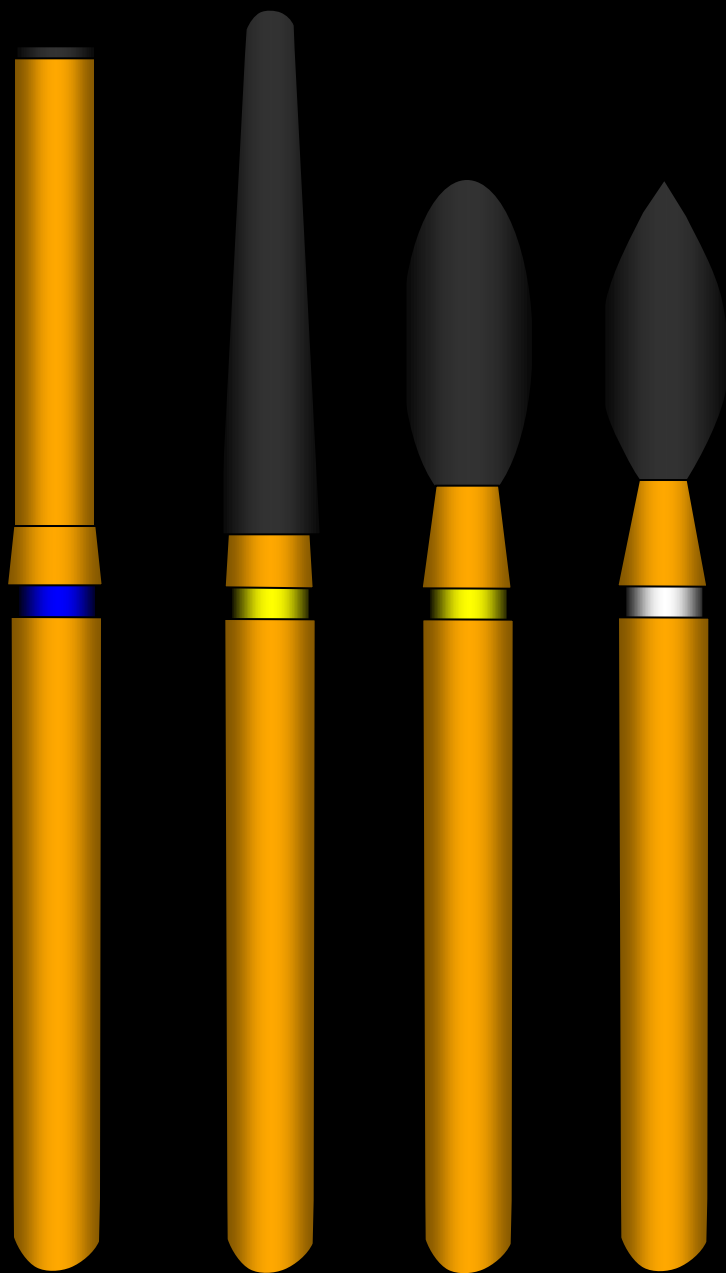






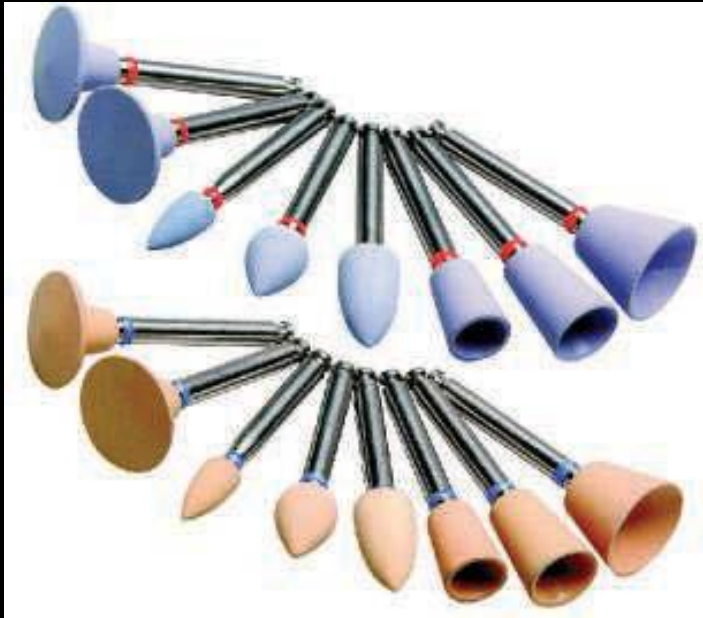
### *3. Intra oral finishing:*

- Using end cutting stone ,white and yellow coded stones.
- For
  - Removing minimal amount and smoothening of tooth structure.
  - Accentuation and planning of finish line.



#### *4. Intra oral polishing:*

- For polishing of restorations.
- Using intra oral brushes, cups, discs or flame shaped non metallic finishing points.



### **3. Bur brush and bur block**

For clearing clogged burs and stones.



**4. Retraction cord** used for retraction of gingiva during preparation and impression to avoid injury of gingiva.



## ***5. Retraction cords applicators***

Used to push retraction cord into the gingival sulcus.



## ***5. Gates glidden reamers***

Used for mechanical removal of gutta-percha( filling of root canal) before post crown insertion.







# E. Impression tools and materials

## *1. Impression materials*

*a. For auto mixing : impression guns, mixing tips and intraoral tips.*



*b. For manual mixing: glass slap or waxed paper pads and rubber base spatula.*



# **F. Provisional restorations tools** **and materials**

Used to construct temporary crown or bridge to protect prepared teeth.

## ***1. Intra oral temporary crown materials:***

Modified composite resin materials





## *2. Extra oral temporary crown materials:*

Self cured acrylic resin:



## **Should not be used intra-orally because:**

- Its reaction is **exothermic** (releases heat during setting) cause pulp hyperemia (inflammation) and death
- Its **residual monomer** causes pulp hyperemia (inflammation) and death
- **High shrinkage** leading to inaccurate fit to tooth and pulp hyperemia
- **Aggressive odor & inaccurate color**
- **Harmful** to health of dentist